Claims

That which is claimed is:

1.   A method of arranging portions of writing strokes, comprising:

partitioning a first writing stroke into at least one first segment;

partitioning a second writing stroke into at least one second segment; and

ordering the first segment and the second segment based upon a spatial relationship

    between the first segment and the second segment.

2.   The method recited in claim 1, wherein the step of partitioning the first writing stroke includes:

defining partition locations along the first writing stroke; and

defining a reference point for the first segment.

3.   The method recited in claim 2, wherein the partition locations are bottom points of the first writing stroke.

4.   The method recited in claim 2, wherein the reference points are high points of the first segments.

5.   The method recited in claim 2, wherein the reference point is a mid-point of the first writing stroke when the first writing stroke is a horizontal line.

6.   The method recited in claim 1, wherein the step of ordering includes determining whether the second segment overlaps the first segment.

7.   The method recited in claim 6, wherein the first segment and the second segment are ordered according to x-coordinate values when the first segment and the second segment do not overlap.

8.   The method recited in claim 6, wherein the second segment is ordered after the first segment when the second segment is a straight line and intersects the first segment.

9.   The method recited in claim 1, wherein the step of ordering includes determining whether x-coordinate values of the first segment are greater than x-coordinate values of the second segment.

10.   The method recited in claim 9, wherein the second segment is ordered after the first segment when the x-coordinate values of the first segment are greater than the x-coordinate values of the second segment.

11.   The method recited in claim 1, wherein the step of ordering includes:

finding a segment low point of the first writing stroke that is closest to a reference point of the second segment; and

ordering the second segment between segments of the first writing stroke on either side of the segment low point when the x-coordinate values of the first segment are less than x-coordinate values of the second segment.

12.   The method recited in claim 11, wherein the order of the second segment is modified based upon features of the segments of the first writing stroke on either side of the segment low point.

13.   The method recited in claim 1, further including a step of ordering the first writing stroke and the second writing stroke based upon a spatial relationship between the first writing stroke and the second writing stroke.

14.   The method recited in claim 13, wherein the step of ordering the first writing stroke and the second writing stroke includes determining whether the first writing stroke completely overlaps the second writing stroke.

15.   The method recited in claim 14, wherein the first writing stroke and the second writing stroke are ordered based upon x-coordinate values of the first writing stroke and the second

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writing stroke when the first writing stroke does not completely overlap the second writing stroke.

16.   The method recited in claim 13, wherein the step of ordering the first writing stroke and the second writing stroke includes identifying a reference point for the first writing stroke and the second writing stroke when the first writing stroke completely overlap the second writing stroke.

17.   The method recited in claim 16, wherein the step of ordering the first writing stroke and the second writing stroke includes ordering the first writing stroke before the second writing stroke when the first writing stroke is larger than the second writing stroke.

18.   The method recited in claim 13, wherein the step of ordering the first writing stroke and the second writing stroke includes determining whether a threshold value is exceeded with regard to an amount of the first writing stroke with x-coordinate values that are larger than a reference point of the second writing stroke.

19.   The method recited in claim 18, wherein the second writing stroke is ordered before the first writing stroke when the threshold value is exceeded.

20.   The method recited in claim 18, wherein the first writing stroke is ordered before the second writing stroke when the threshold value is not exceeded.

21.   An apparatus for analyzing electronic ink, the apparatus comprising:
        a capture interface that records writing strokes of the electronic ink;
        an ordering module that orders segments of the writing strokes based upon spatial
                relationships of the segments;
        a recognition module that analyzes the segments and associates characters with the
                segments.

22. The apparatus recited in claim 21, wherein the capture interface records electronic ink detected by a digitizer.

23. The apparatus recited in claim 21, wherein the ordering module includes:

a stroke ordering module that orders the writing strokes based upon spatial relationships of the writing strokes; and

a segment ordering module that orders the segments based upon the spatial relationships of the segments.

24. The apparatus recited in claim 23, wherein the ordering module further includes a stroke partitioning module for partitioning the stokes into the segments.

25. The apparatus recited in claim 21, wherein the recognition module includes a segment recognition module for associating the characters with the segments.

26. The apparatus recited in claim 25, wherein the recognition module further includes a segment use determination module.

27. A computer-readable medium having computer-executable instructions for performing steps of:

ordering writing strokes based upon spatial relationships between the writing strokes;

partitioning the writing strokes into segments;

ordering the segments based upon spatial relationships between the segments; and

analyzing the segments to associate characters with the segments.

28. The computer-readable medium recited in claim 27, wherein the step of ordering writing strokes includes determining whether the strokes completely overlap.

29. The computer-readable medium recited in claim 28, wherein strokes are ordered based upon x-coordinate values when the strokes do not completely overlap.

30. The computer-readable medium recited in claim 27, wherein the step of ordering writing strokes includes comparing sizes of the strokes and ordering larger strokes before smaller strokes.

31. The computer-readable medium recited in claim 27, wherein the step of ordering writing strokes includes determining an amount by which a larger one of the strokes with x-coordinate values that are larger than a reference point of a smaller one of the strokes.

32. The computer-readable medium recited in claim 31, wherein the smaller one of the strokes is ordered before the larger one the strokes when the amount exceeds a threshold value.

33. The computer-readable medium recited in claim 31, wherein the larger one of the strokes is ordered before the smaller one the strokes when the amount is less than a threshold value.

34. The computer-readable medium recited in claim 27, wherein the step of partitioning includes defining partition locations along the strokes and defining reference points for the segments.

35. The computer-readable medium recited in claim 34, wherein the partition locations are bottom points of the segments, and the reference points are top points of the segments.

36. The computer-readable medium recited in claim 34, wherein the reference points are mid-points of the strokes when the strokes are horizontal lines.

37. The computer-readable medium recited in claim 27, wherein the step of ordering the segments includes determining whether the segments overlap.

38. The computer-readable medium recited in claim 37, wherein the segments are ordered according to x-coordinate values when the segments do not overlap.

39.   The computer-readable medium recited in claim 27, wherein the step of ordering the segments includes comparing x-coordinate values of the segments.

40.   The computer-readable medium recited in claim 39, wherein a first of the segments is ordered after a second of the segments when an x-coordinate value of the second of the segments is greater than an x-coordinate value of the first of the segments.

41.   The method recited in claim 27, wherein the step of ordering the segments includes modifying positions of segments based upon features of the adjacent segments.